

CLAIMS

1. An apparatus for detecting a property of an object contained in a specimen, the apparatus comprising

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a frame,

a member positioned on the frame and having a surface that is adapted to receive and hold the specimen,

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at least a first light source for emission of at least a first light beam towards the specimen held by the member,

at least one detector for detection of light emitted from the object upon interaction with the

15 at least first light beam, and

scanning means for scanning the at least first light beam in relation to the at least one detector across the specimen along a non-linear curve,

20 wherein the objects of the specimen are stained with two or more fluorescent markers.

2. An apparatus according to claim 1, wherein the two or more fluorescent markers are excited by a single light source.

25 3. An apparatus according to claim 2, wherein two or more detectors are adapted to detect light emitted from each of the two or more fluorescent markers.

4. An apparatus according to claim 1, wherein the two or more fluorescent markers are excited by two or more light sources.

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5. An apparatus according to claim 4, wherein the scanning means are adapted to perform successive scans of the specimen, the one or more light beams in each scan and in each successive scan being adapted to excite specific markers on the objects.

6. An apparatus according to claim 5, wherein one detector is adapted to detect light emitted from each marker excited by the one or more light sources in a single scan.

1ma2a2 > 7. An apparatus according to any of the preceding claims, wherein the member is positioned for rotation about an axis on the frame and the scanning means comprise means for rotating the member about the axis.

8. An apparatus according to any of the preceding claims, further comprising scanning control means for controlling the scanning means for scanning the specimen along a predetermined curve.

9. An apparatus according to claim 8, wherein the scanning control means are adapted to control the scanning means in such a way that the predetermined curve is a substantially circular curve.

1ma2a3 > 15 10. An apparatus according to claim 8 or 9, further comprising storage means for storage of signals provided by the detector and corresponding position signals provided by the scanning control means.

20 11. An apparatus according to claim 10, further comprising means for sampling and digitising the detector signals and the position signals.

1ma2a4 > 12. An apparatus according to any of the preceding claims, further comprising signal processing means operatively connected to the detector to detect a presence of an object based on the detector signals.

13. An apparatus according to claim 12, wherein position signals relating to detected objects are stored in the storage means.

30 14. An apparatus according to claim 13, wherein the stored positions of the detected objects are retrieved, and used by said scanning means to position a means for optical inspection of detected objects.

1ma2a5 > 35 15. An apparatus according to any of the preceding claims, wherein the specimen has an area larger than 500 mm².

- Ans 96*
16. An apparatus according to any of the preceding claims, wherein the specimen has an area larger than 8000 mm².
- 5 17. An apparatus according to any of the preceding claims, wherein the scanning means further comprise deflecting means for scanning the first light beam across the specimen along a radius of the circular movement of the member.
18. An apparatus according to any of the preceding claims, wherein the light source is
10 positioned for rotation about an axis on the frame and the scanning means comprise means for rotating the light source about the axis.
19. An apparatus according to any of the preceding claims, wherein the scanning means further comprise deflecting means for scanning the first light beam across the specimen
15 along a radius of the circular movement of the light source.
20. An apparatus according to any of the preceding claims, wherein the scanning means further comprise movable deflecting means for variable deflection of the first light beam.
- 20 21. An apparatus according to claim 20, wherein the movable deflecting means comprise a first mirror that is rotatable around a first axis so that the first light beam can be scanned across the specimen along a substantially circular curve.
22. An apparatus according to claim 21, wherein the first mirror is further rotatable around
25 a second axis for variation of the radius of the circular curve.
- Ans 97*
23. An apparatus according to any of the preceding claims, wherein a mask is inserted in the optical path between the specimen and the detector, and
- 30 the mask comprises at least one transparent aperture.
24. An apparatus according to claim 23, wherein the aperture shape is a substantially rectangular shape.

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25. An apparatus according to claim 23 or 24, wherein at least one dimension of the aperture, as projected on the specimen, is between 0.75 and 2 times the dimensions of objects to be detected.
- 5 26. An apparatus according to any of the preceding claims, wherein one of the two or more fluorescent markers is Fluorescein.
27. An apparatus according to any of the preceding claims, wherein the light source is a coherent light source.
- 10 28. An apparatus according to any of the preceding claims, wherein the first light beam is adapted to provide a light spot having a diameter between 20-150 μm on the specimen,
29. A method of detecting a property of an object contained in a specimen and comprising
15 the steps of:
- positioning the specimen on a member having a surface that is adapted to receive and hold the specimen,
- 20 staining the objects with two or more fluorescent markers,
- emitting at least a first light beam towards the specimen held by the member
- scanning the at least first light beam in relation to a detector across the specimen along a non-linear curve, and
- 25 detecting light emitted from the object stained with two or more markers upon interaction with the at least first light beam during scanning of the specimen.
30. A method according to claim 29, comprising the step of exciting the two or more fluorescent markers by a single light source.
31. A method according to claim 30, further comprising the step of detecting light emitted from each of the two or more fluorescent markers by two or more detectors.

32. A method according to claim 29, comprising the step of exciting the two or more fluorescent markers by two or more light sources.

33. A method according to claim 32, further comprising the step of scanning the scanning means successively over the specimen, the one or more light beams in each scan and in each successive scan being adapted to excite specific markers on the objects.

34. A method according to claim 33, comprising the step of detecting light emitted from each marker excited by the one or more light sources in a single scan by one detector.

35. A method according to any of claims 29-34, further comprising the step of rotating the member holding the specimen about an axis.

36. A method according to any of claims 29-35, further comprising the step of storing signals relating to the detected property and corresponding data relating to the current position of the member.

37. A method according to claim 36, further comprising the step of sampling and digitising the signals and the data.

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